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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,036	01/19/2005	Kenji Maruyama	SHIGA7.004APC	1510
20995 7590 12/26/2006 KNOBBE MARTENS OLSON & BEAR LLP 2040 MAIN STREET FOURTEENTH FLOOR IRVINE, CA 92614			EXAMINER LEE, SIN J	
			ART UNIT 1752	PAPER NUMBER
			NOTIFICATION DATE 12/26/2006	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

jcartee@kmob.com
eOAPilot@kmob.com

**Advisory Action
Before the Filing of an Appeal Brief**

Application No.

10/522,036

Applicant(s)

MARUYAMA ET AL.

Examiner

Sin J. Lee

Art Unit

1752

--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 05 December 2006 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.
b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on _____. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);
(b) ☐ They raise the issue of new matter (see NOTE below);
(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: _____. (See 37 CFR 1.116 and 41.33(a)).

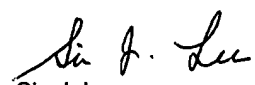
4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).
5. ☐ Applicant's reply has overcome the following rejection(s): _____.
6. ☐ Newly proposed or amended claim(s) _____ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.
The status of the claim(s) is (or will be) as follows:
Claim(s) allowed: 1,4-10,13-18,21 and 22.
Claim(s) objected to: 30,31,39 and 40.
Claim(s) rejected: 23-29,32-38,41 and 42.
Claim(s) withdrawn from consideration: _____.

AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

REQUEST FOR RECONSIDERATION/OTHER

11. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: _____.
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). _____
13. ☒ Other: Please see attachment.


Sin J. Lee
Primary Examiner
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DETAILED ACTION

Claim Rejections - 35 USC § 102

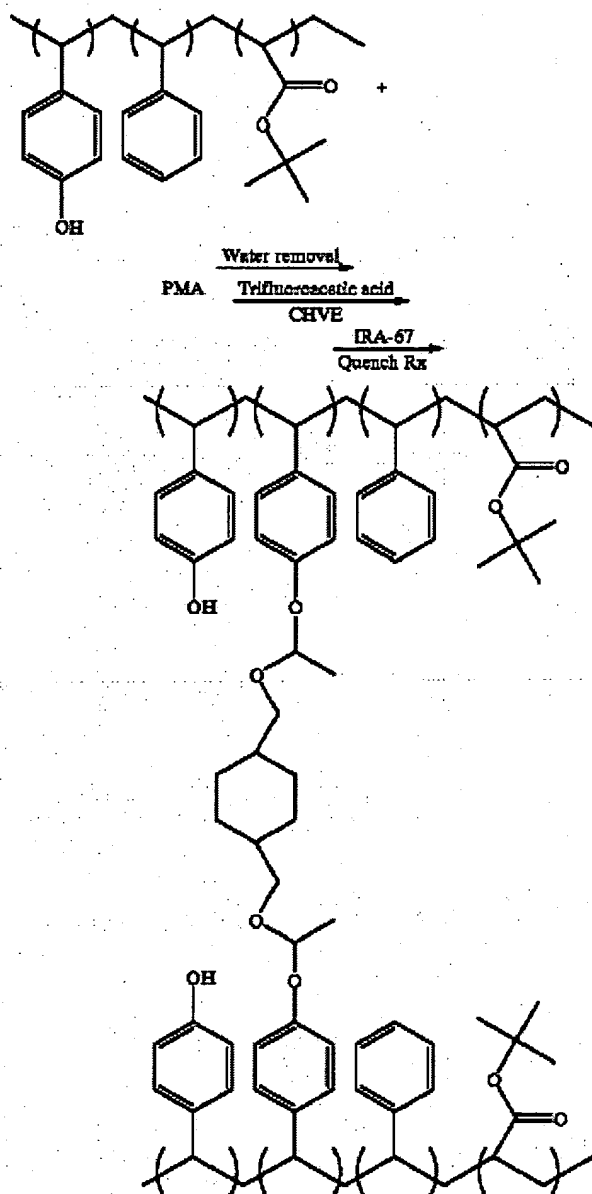
1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 23-26, 28, 29, 32-35, 37, 38, 41 and 42 are rejected under 35 U.S.C. 102(b) as being anticipated by Adams et al (US 2002/0012869 A1).

In Example 1, Adams teaches the synthesis of the following polymer:

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Synthesis of 1,4-cyclohexanedimethanol divinyl
ether (CHVE) Crosslinked Hydroxystyrene
(HS)/Styrene/t-butylacrylate terpolymer

[0048]



The mole % for the *styrene unit* in the starting polymer (i.e., uncrosslinked polymer) is 20 mol %. Adams combines his polymer with a photoacid generator and ethyl lactate

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solvent (the ethyl lactate solvent is also cited in present specification, pg.27 as one of examples for the ester solvent), and the formulated photoresist is spin coated onto a silicon wafer; solvent removed by soft bake; the resist layer is exposed to 248 nm radiation; the exposed resist layer is subjected to post-exposure thermal treatment; and then the resist layer is developed to obtain a resist pattern (see [0053]). *Adams also teaches ([0036]) the use of a base such as tetrabutylammonium hydroxide (TBAH) or a lactate salt of TBAH in the amount of 1-20% by weight relative to the photoacid generator. Adams states that his resist composition can be photoactivated by an exposure wavelength in the deep UV range, typically about 150 to 300 or 450 nm.*

Adam states in Example 1 (see [0051]) that the acid catalyst (which was used in making the polymer shown above) was removed by using ion exchange beads for two hours.

Present specification, pg.14, states that the acid component (such as an acid catalyst used to synthesize present resin) can be removed by using ion exchange resin. *Also, present specification (pg.27) states that even though ester solvents are sometimes decomposed over time to produce an acid as by-product, the decomposition reaction is suppressed in the presence of a basic compound (Adams also teaches the use of a basic compound as discussed above).* Therefore, it is the Examiner's position that

Adam (which uses the same method of removing the acid catalyst and which teaches the use of a basic compound)'s composition would inherently meet present limitation as to the acid component being 10 ppm or less. Therefore, Adams teaches present inventions of claims 23-26, 28, 29, 32-35, 37 and 38 (it is the Examiner's position that Adams's photoresist composition would inherently be capable of being used for a thick-

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firm photolithography process used for forming a resist film having a thickness of 2-7 μm and for forming a resist pattern for implantation as recited in claims 28, 29, 37 and 38).

With respect to present claims 41 and 42, Adams teaches the equivalence of ethyl lactate and methyl ethyl ketone in [0038]. Since there are only several examples for the organic solvent listed in [0038], one skilled in the art would immediately envisage using methyl ethyl ketone as Adams' solvent. Therefore, Adams teaches present inventions of claims 41 and 42.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 27 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Adams et al (US 2002/0012869 A1) in view of Takeda et al (US 6,593,056 B2).

As discussed above, Adams uses ethyl lactate solvent for his positive chemically-amplified photoresist composition. As evidenced by Takeda, col.42, lines 35-37, lines 50-53, γ -butyrolactone and ethyl lactate are art-known equivalent solvents for chemically amplified positive resist composition. Therefore, because those two solvents were art-recognized equivalents at the time the invention was made, it would have been obvious to one skilled in the art to use γ -butyrolactone as Adams's solvent. Therefore, Adams in view of Takeda would render obvious present inventions of claims 27 and 36.

Allowable Subject Matter

5. Claims 30, 31, 39 and 40 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the

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limitations of the base claim and any intervening claims. Adams does not teach or suggest present step of forming a resist film having a thickness of 2-7 um as claimed in claims 30 and 39.

6. Claims 1, 4-10, 13 and 14 are allowed. Adams et al does not teach or suggest present resin (A) of claim 1. Claims 15-18, 21 and 22 are allowed. Adams et al does not teach or suggest present poly(bissulfonyl)diazomethane photoacid generator of present claim 15.

Response to Arguments

7. Applicants argue that the ethyl lactate solvent provides a significant amount of acid component in the form of carboxyl groups and would certainly result in an acid content of the photoresist composition of greater than 10 ppm. Thus, applicants argue that Adams do not teach photoresist compositions, which have acid contents of 10 ppm or less. However, ethyl lactate solvent is also listed in present specification as one of examples for the solvent suitable for present invention. Also, applicants clearly state that decomposition of ester solvents (such as ethyl lactate) over time to produce an acid is suppressed in the presence of the basic component. Applicants also state that the ester solvents exert a remarkable effect and are *preferable* in the presence of the basic component (see pg.27 of present specification). Since Adams also teaches the use of a basic compound, it is the Examiner's position that Adam's composition would inherently meet present limitation as to the acid component being 10 ppm or less. Applicants also argue that Adam teaches the addition of acidic component to the dissolved resin/photoacid generator and thus Adam teaches away from the present invention. By

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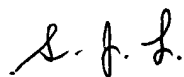
"acidic component", do applicants mean the ethyl lactate solvent? If so, as explained above, since Adams teaches the use of a basic compound and since Adams uses the same method of removing the acid catalyst, Adam's composition would inherently have the acid component of 10 ppm or less.

For the reasons stated above, present rejections over Adams et al'869 still stand.

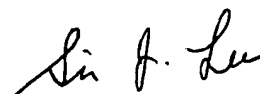
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sin J. Lee whose telephone number is 571-272-1333. The examiner can normally be reached on Monday-Friday from 9:00 am EST to 5:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly, can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is **571-273-8300**.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



S. Lee
December 19, 2006



SIN LEE
PRIMARY EXAMINER